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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/164,714	10/01/98	TUCKER	K 7116-074

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EXAMINER	
WILSON, M	
ART UNIT	**PAPER NUMBER**
1633	8

DATE MAILED: 06/20/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/164,714	Applicant(s) Tucker et al.
	Examiner Wilson, Michael C.	Group Art Unit 1633

☒ Responsive to communication(s) filed on *Mar 29, 2000*.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-70* is/are pending in the application.

Of the above, claim(s) *1-8, 18, 19, and 22-70* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *9-17, 20, and 21* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *2 and 6*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

DETAILED ACTION

Sequence Listing

The sequence listing filed 3-29-00, paper number 5, has been entered.

The Information Disclosure Statements filed 10-1-98, paper number 2, and 3-29-00, paper number 6, have been considered and made of record.

Election/Restriction

1. Applicant's election of Group II in Paper No. 4 filed 3-29-00 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 1-8, 18, 19 and 22-70 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4.

Claims 9-17, 20 and 21 are under consideration in the instant invention.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 9-17, 20 and 21 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated nucleic acid molecule comprising a nucleic acid

sequence selected from the group consisting of a) SEQ ID NO:2-6 or 8-20 or a complementary sequence thereof, b) a nucleic acid sequence encoding SEQ ID NO:1 or 7 or a complementary sequence thereof does not reasonably provide enablement for using any nucleic acid which is "substantially homologous" to OMP21, or a "fragment" thereof or sequences which hybridize under any stringent conditions as broadly claimed. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

For clarification, SEQ ID NO:2-5 are degenerate PCR primers used to isolate the OMP21 gene (page 57, line 7), SEQ ID NO:6 is the entire OMP21 gene (page 60, line 9), SEQ ID NO:8-11 are primers for suppression PCR (page 58, line 14) and SEQ ID NO:12-14 are sequencing primers (page 60, line 1). Mutations in the OMP21 gene were made using primers SEQ ID NO:15 and 16 (page 60, line 25). SEQ ID NO:17-20 are PCR primers of the OMP21 gene and introduce a restriction site (page 61, line 35). SEQ ID NO:7 is the deduced amino acid sequence of OMP21 (page 60, line 11). SEQ ID NO:1 is a fragment of the OMP21 amino acid sequence (page 25, line 23). The function of the OMP21 protein is not known or disclosed. In general, the nucleic acids disclosed have utility in detecting the presence of the pathogen *M. catarrhalis*.

Because of the broad claim language regarding the hybridization conditions and the phrase "a sequence substantially homologous thereto, or any fragment thereof," numerous nucleic acid sequences which hybridize to the nucleic acids of applicants invention but do not detect the presence of *M. catarrhalis* are encompassed by the claims. Essentially, any nucleic acid which

shares one base pair in common would hybridize under "stringent conditions" to the nucleic acid sequences claimed. The specification does not enable using any "fragment" or "substantially homologous" portion of the OMP21 using any stringent conditions to isolate the nucleic acids of the instant invention. The specification does not enable one of skill to determine what applicants consider "substantially homologous" or "stringent conditions" required to isolate the nucleic acids of the instant invention that are used to detect *M. catarrhalis*. The courts have stated that reasonable correlation must exist between scope of exclusive right to patent application and scope of enablement set forth in patent application. *Ex parte Maizel,* 27 USPQ2d 1662 (BPAI 1992). Because the claims encompass numerous nucleic acid sequences which do not provide any disclosed use, the claims are not enabled as broadly claimed and should be limited to a more representative group of nucleic acids that can be used to detect *M. catarrhalis*.

The specification does not teach how to adapt a vector for transformation of a host cell or for delivery of a sequence (claims 13, 14, 20 and 21). In addition, the specification does not enable a host cell or vector in combination with the multitude of sequences encompassed by claims 9-12. For example, the specification does not teach how to use a cell with the sequencing primers SEQ ID NO:12-14. Primers which are claimed within expression vectors are not enabled because Applicants only teach these primers to function as primers. It is noted that the specification fails to teach "how to use" these primers with regard to use in expression vectors or host cells (for cell transfection, for example). Nor do these primers appear to encode functional protein fragments. As such, Applicants must provide evidence that these primers are functional in

expression vectors since such a use for these sequences is not disclosed by the specification and the specification fails to enable their use.

The specification does not enable one of skill to determine which "expression means" are useful in the instant invention. It is unclear whether the term "expression means" refers to a promoter sequence, a nucleic acid sequence which expresses a protein or some other compound. The specification does not teach leader sequences for secretion or purification (claim 15). Without such guidance it would require one of skill undue experimentation to determine how to adapt the vector, determine "expression means" or isolate leader sequences which are useful in the instant invention.

The specification does not enable transforming host cells *in vivo* which is encompassed by claims 16 and 17 or delivery to a host *in vivo* (claims 20 and 21). The state of the art at the time of filing was such that the vector, promoter, and route of delivery required to transform cells *in vivo* was not within the realm of routine experimentation for one of skill (Verma et al. Sept. 18, 1997, Nature, Vol. 389, pages 239-242; see page 239, 3rd column, line 10). The vector, promoter and elements of a construct, mode and route of delivery and level of expression required to obtain a desired effect using gene delivery *in vivo* were not within the realm of routine experimentation to one of skill at the time of filing. The specification does not disclose transforming cells *in vivo* or delivering the sequence to a host *in vivo*; therefore, the claims should be limited to an "isolated" transformed cell and delivery to an "isolated" host cell.

Accordingly, in view of the quantity of experimentation necessary for one of skill to determine the parameters listed above, the lack of direction or guidance provided by the specification with regard to the use of any of the numerous nucleic acid sequence which are encompassed by the claim to detect *M. catarrhalis*, the state of the art with respect to host cells *in vivo*, and the breadth of the claims directed to an enormous number of nucleic acid fragments which may or may not detect *M. catarrhalis*, it would have required undue experimentation for one skilled in the art to make and/or use the claimed invention as broadly claimed without a reasonable expectation of success.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-17, 20 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9-11, 13-17, 20 and 21 are indefinite because it unclear what applicants consider "substantially homologous." While various methods of calculating homology are known in the art and the specification describes homology (page 17, line 30), the examples provided do not indicate the limits of what applicants consider substantial. Without such guidance the metes and bounds of the phrase cannot be determined.

Claims 11, 13-17, 20 and 21 are indefinite because it is not clear what applicants consider "stringent conditions." While various stringent conditions are known in the art and the

specification discusses low stringency and high stringency (page 34), applicants do not define the conditions required to isolate the nucleic acids of interest.

Claim 12 is indefinite because the accession number of the plasmid is not in the claim. Therefore, the metes and bounds of the claim cannot be determined.

Claims 13, 14, 20 and 21 are rejected because the term "adapted" is indefinite. Applicants have not defined "adapted" in the specification such that the metes and bounds of the term can be determined. It is unclear whether applicants intend to claim mutating the nucleic acid, adding a "plasmid" to a "recombinant expression vector" or preparing the vector in a transformation reagent.

Claim 14, 15 and 21 are rejected because the phrase "expression means" is indefinite. It is unclear whether the expression means refers to a promoter or other nucleic acid sequence or whether the phrase refers to a transformation reagent or other compound. It is unclear how the "expression means" is operatively coupled to the nucleic acid molecule.

The phrase "for expression by the host of said OMP21" is indefinite because it is unclear whether the phrase refers to the nucleic acid molecule or the expression means. The "host of said Omp21" (claims 14) is unclear because the phrase may refer to the host cell on line 2 or some host that may contain a cell. The "host cell of said OMP21" (claim 15) is indefinite because the host cell is not part of the protein.

Claim 15 is indefinite because it is not clear how a leader sequence correlates to secretion or purification. A leader sequence may be considered a nucleic acid sequence leading up to the

coding region such as regulatory elements which are not expressed. In addition, it is unclear how a "leader sequence" relates to "purification." Therefore, the metes and bounds of the phrase cannot be determined.

Claim 15 is indefinite because it is unclear whether the term "includes" is intended to be open or closed claim language. Likewise, it is unclear whether the term "containing" (claims 16 and 17) is intended to be open or closed claim language.

The claim language in claim 1 should be incorporated into claim 9. While claim 1 is not under consideration, the claim language of claim 1 upon incorporation into claim 9 is indefinite. It is unclear what applicants consider "substantially purified," the "apparent" molecular weight or "about 16 kD to about 20 kD." The metes and bounds of which proteins are encompassed by the language cannot be determined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 9-11, 13-17, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Claus et al. (EP 614989, 9-14-94).

Claus et al. teach a primer which has 100% homology to SEQ ID NO:16 from base pairs 3-27 (page 7, line 23, second primer). This is considered equivalent to a substantially homologous fragment of the OMP21 nucleic acid sequence as claimed and would anneal to the OMP21 gene under stringent conditions. Therefore, Claus et al. anticipate the claims as written.

5. Claims 9-11, 13-17, 20 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Darrasse et al. (WO9325708, Dec. 23, 1993).

Darrasse et al. teach a primer with 93.3% homology to base pairs 13-27 of SEQ ID NO:12 (page 33, line 21). This fragment is considered equivalent to a substantially homologous fragment of the OMP21 nucleic acid sequence as claimed and would anneal to the OMP21 gene under stringent conditions. Therefore, Darrasse et al. anticipate the claims as written.

6. Claims 9-11, 13-17, 20 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Wadsworth et al. (US Patent 5,604,131, Feb. 18, 1997).

Wadsworth et al. teach a primer with 93.8% homology to base pairs 33-48 of SEQ ID NO:13 (column 45, SEQ ID NO:16). This fragment is considered equivalent to a substantially homologous fragment of the OMP21 nucleic acid sequence as claimed and would anneal to the OMP21 gene under stringent conditions. Therefore, Wadsworth et al. anticipate the claims as written.

Claim 12 could not be searched because the accession number has been left blank.

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wilson whose telephone number is (703) 305-0120. The examiner can normally be reached on Monday through Friday from 8:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John LeGuyader, can be reached on (703) 308-0447. The fax phone number for this Group is (703) 308-8724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-0196.

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